lateral band passes in front of and behind the eye, but does not touch the granules encircling the eye, which remain light-coloured. Along the lower third of the lateral region is a regular series of irregular darkish spots or mottlings. Along the middle lateral region passes a narrow light-coloured strip free from any spots. Under surface very light fawn; in abdominal region a bluish tinge is present, probably due to the subjacent viscera. Upper and lower labials dark-edged.

	Spec. A. millim.	Spec. B. millim.
Total length	79	74
Head	8	7
Width of head	5	4·5
Body	24	23
Fore limb	8·5	8
Hind limb	14	13
Tail	47	44

Loc. Muldiva, North Queensland.

The types will be deposited in the British Museum.

MISCELLANEOUS.

Notes on the Anatomy of Yoldia.—I.

By W. K. Brooks and Gilman Drew.

(Abstract of part of a paper reported to the National Academy of Sciences, April 23rd, 1896.)

In the year 1874 one of the authors published a short paper in the 'Proceedings of the American Association for the Advancement of Science' calling attention to an organ of special sense in the Lamellibranch *Yoldia*. This organ consists of an unpaired tentacle which arises from the mantle near the base of the siphons and is apparently tactile in function.

Since the appearance of this paper many writers on Lamellibranch anatomy have mentioned this organ of special sense, but very little has been added to our knowledge of it. Pelseneer has noted it as occurring on the right side of such specimens of *Leda* as he has examined *, on the left side of his single specimen of *Malletia pallida*, and on either the right or left side (but never paired) in *Yoldia isonota* †.

* "Contribution à l'étude des Lamellibranches," tome xi. Archives de Biologie.

† Report on the Anatomy of Deep-sea Mollusca, Zool. 'Challenger' Exped. pt. lxxiv.

This paper will deal briefly with the position, structure, and nervous connexion of this organ in *Yoldia*.

Two species have been studied—*Y. limatula* and *Y. sapotillo*. Most of the material was obtained through Mr. Richard Rathbun, of the U.S. Fish Commission, and Dr. James L. Kellogg, of Olivet College.

The siphons, long and slender in the adult animal, arise as ridges at the mantle-margin, which ultimately unite in such a manner that two closed tubes are formed. A muscle is developed which serves to retract the siphons, and thus they may be completely withdrawn between the mantle-lobes, although their bases originate at the mantle-margins.

The tentacle under discussion is attached to the point of union of the ventral siphon with the adjacent mantle-lobe, on a level with the ventral border of this siphon, and it lies, when the siphons are retracted, between the mantle-lobe to which it is attached on one side and the walls of the siphons on the other. In both of the species examined the tentacle occurs in about equal proportions on the right and on the left sides, but is apparently never paired. When extended it is a long and slender filament, gradually tapering to its free extremity, and set throughout its length with small somewhat conical papillæ, at the tip of each of which ample magnification shows a cluster of sense-hairs. When retracted it presents a series of transverse wrinkles which tend to obscure these sense-papillæ. Beneath the surface-layer of epithelium run strands of longitudinal muscle-fibres imbedded in connective tissue. On the side nearest the mantle-lobe to which it is attached (right or left, according to its position), and beneath the muscle-layer, is a large nerve which can easily be traced to the tentacle's tip. On the side opposite the nerve, also within the muscle-layer, is a more or less definite space in the connective tissue which is likewise continuous the length of the tentacle. This space, which appears to be a blood-space, is best seen in cross-sections of a somewhat extended tentacle, in which case remnants of a coagulum may be seen in it. Extension of the tentacle seems to be accomplished solely by forcing blood into this space. When the muscles of the tentacle contract, the blood is forced back, and the space may be completely obliterated.

From the posterior end of each visceral ganglion a nerve arises which soon divides. One of these divisions is distributed to the siphons and their retractors, the other to the posterior portion of the mantle-margin. It is from this latter division that the tentacle receives its nerve. In specimens in which the siphons are strongly retracted the base of the nerve which supplies the specialized tentacle is pulled some distance above the tentacle's base. The two nerves, which now lie side by side near the base of the tentacle, form a mass of nervous matter which appears superficially much like a ganglion, and doubtless has been mistaken for one.

The posterior ventral margins of the mantle are fringed with ordinary marginal tentacles which have, beneath the superficial layer of epithelial cells, both longitudinal and transverse strands of

muscle-fibres and generally several blood-spaces. Although I have been unable to trace branches of the pallial nerves into these tentacles, I have traced them to their bases, and there can be little doubt that they are supplied by fibres from these nerves.

If, then, we consider the following points—1st, the specialized tentacle is marginal in formation, and is carried back with the siphons during their development, and more especially by their retraction; 2nd, it is placed sometimes on the right and sometimes on the left side, which may indicate that it is an organ of late specialization, not thoroughly settled in position; and 3rd, it receives its nervous supply as a branch of the same nerve which supplies the marginal tentacles—it may be justifiable to call attention to a possible homology between the specialized tentacle and a marginal tentacle which has become slightly modified in structure and very much enlarged and specialized.—*Johns Hopkins University Circulars*, June 1896, pp. 85, 86.

Some Observations on Spermatogenesis in Spiders.

By Julius Wagner, of St. Petersburg.

My investigations in the course of last year have yielded results which differ so greatly from the observations of Gilson ('La Cellule,' t. i.) that I do not consider it superfluous to communicate them, although my studies are not yet completed. The main part of the work was carried out in the Zoological Institute at Heidelberg, and I feel impelled to avail myself of this opportunity of expressing to Hofrath Prof. Bütschli my best thanks for his constant attention and never-failing guidance.

(1) Cell-boundaries between the spermatogones do not exist during the earlier stages. The delimitation of the bodies of the cells takes place at different times according to the species, and in consequence of this the spermatogones of the last generation may be both uni- and multinucleate.

(2) The division of the nuclei of the spermatogones, while not following the ordinary plan of karyokinesis, is nevertheless not amitotic.

(3) In the transformation of the nucleus of the spermatogone into that of the spermatocyte the former network of linin gives rise to a linin-thread or to a few such threads. The nuclei come to assume an excentric position; the whole of the linin passes over with the chromatin granules into one half of the nucleus, namely into that which is adjacent to the periphery of the cell. The linin-thread (or the rows of the chromatin granules) forms loops, all of which are of the same length and have the same direction; in this way the linin-thread divides into portions of equal length. Simultaneously the formation of the nucleolus takes place.

(4) The granules of archoplasm collect in the narrow space which remains between the chromatin half of the nucleus and the surface of the cell. In the interior of the collection of archoplasm thus